RFINT ATM DATALINK Upgrade

WR-ALC/LXGG

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27 July 04

Outline

- Program Description
- Program Drivers
- Status
- Schedule
- PME
- Size, Weight and Power
- Interface Issues
- Backup Slides

Program Description

Background:

The Adaptive Link Formatter (ALF) provides the communications interface between the RAS-1R Prime Mission Equipment (PME) and the Data Link on the U-2 Weapon System aircraft.

1)The ALF was not replaced in the reliability and maintainability upgrade of the RAS-1A to RAS-1R. ALF can no longer be supported because critical parts are obsolete.

2)Removal of the ALF requires a similar change to the DGIF-2 and GCP.

3)The DGIF Link Interface Processor (LIP) is also becoming difficult to support.

Program Drivers

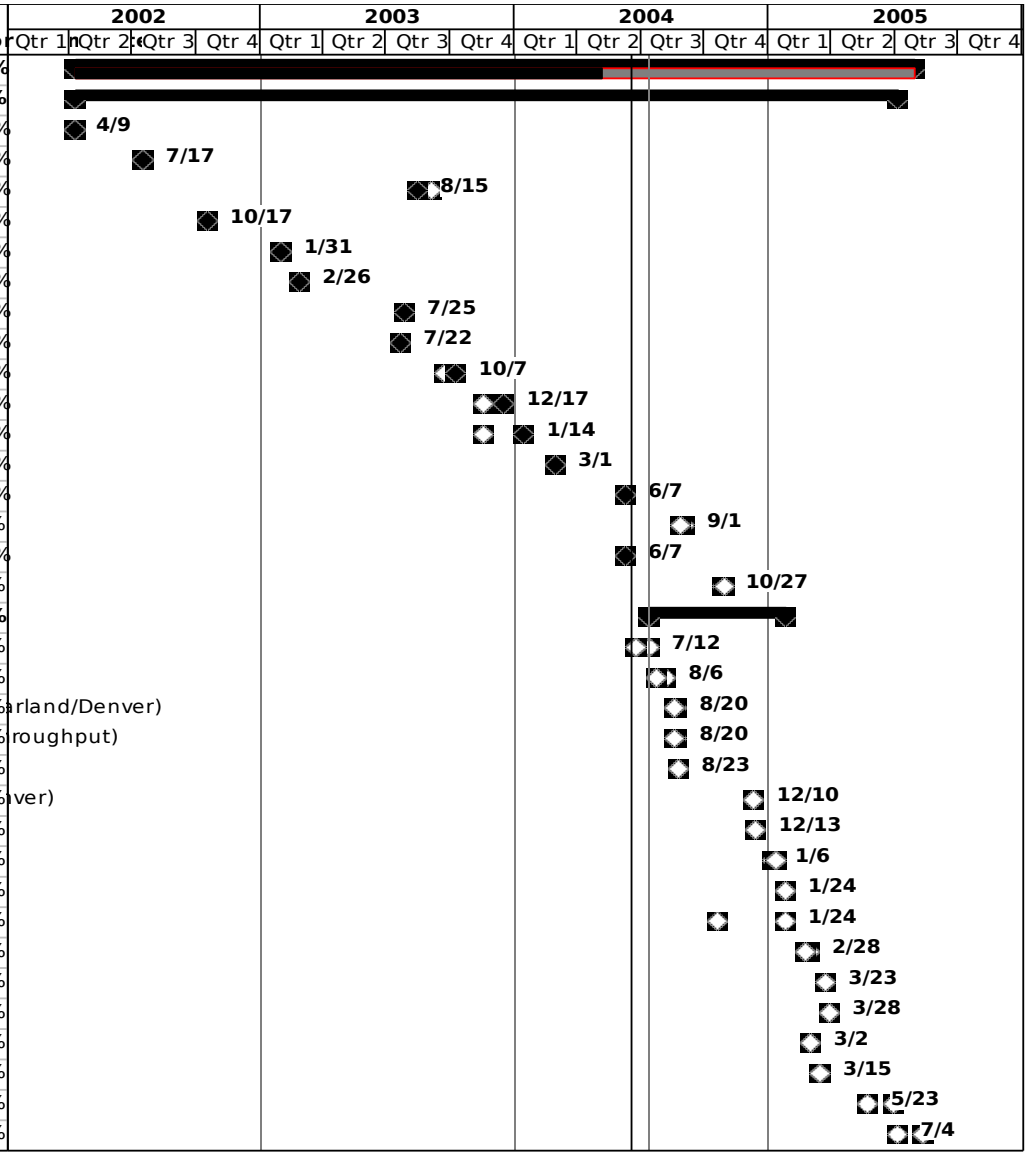
- VVI is main driver for replacement of ALF
  - DGIF, GCP and Ground Support Equipment all interface to the link and thus have similar VVI interface cards
- Requirements
  - ARS ORD–AIA ORD 002-88-II/III Rev 1,1997
  - DCGS ORD - CAF 304-96-I Rev 28 Feb 2001
- Removing the ALF unit will reduce support cost, provide a modern network interface using commercial standards and permit access to additional data link.
- Transitioning the DGIF-2 and GCP to the standard Asynchronous Transfer Mode (ATM) interface will permit the LIP and Telemetry Link Adaptor (TLA) to be removed once ALF-less RAS-1R’s are the only PME in service
- A Controlled Interface (CI) will be added for compliance with Security Directive DCID 6/3
- Flight Test the modified components.

Status

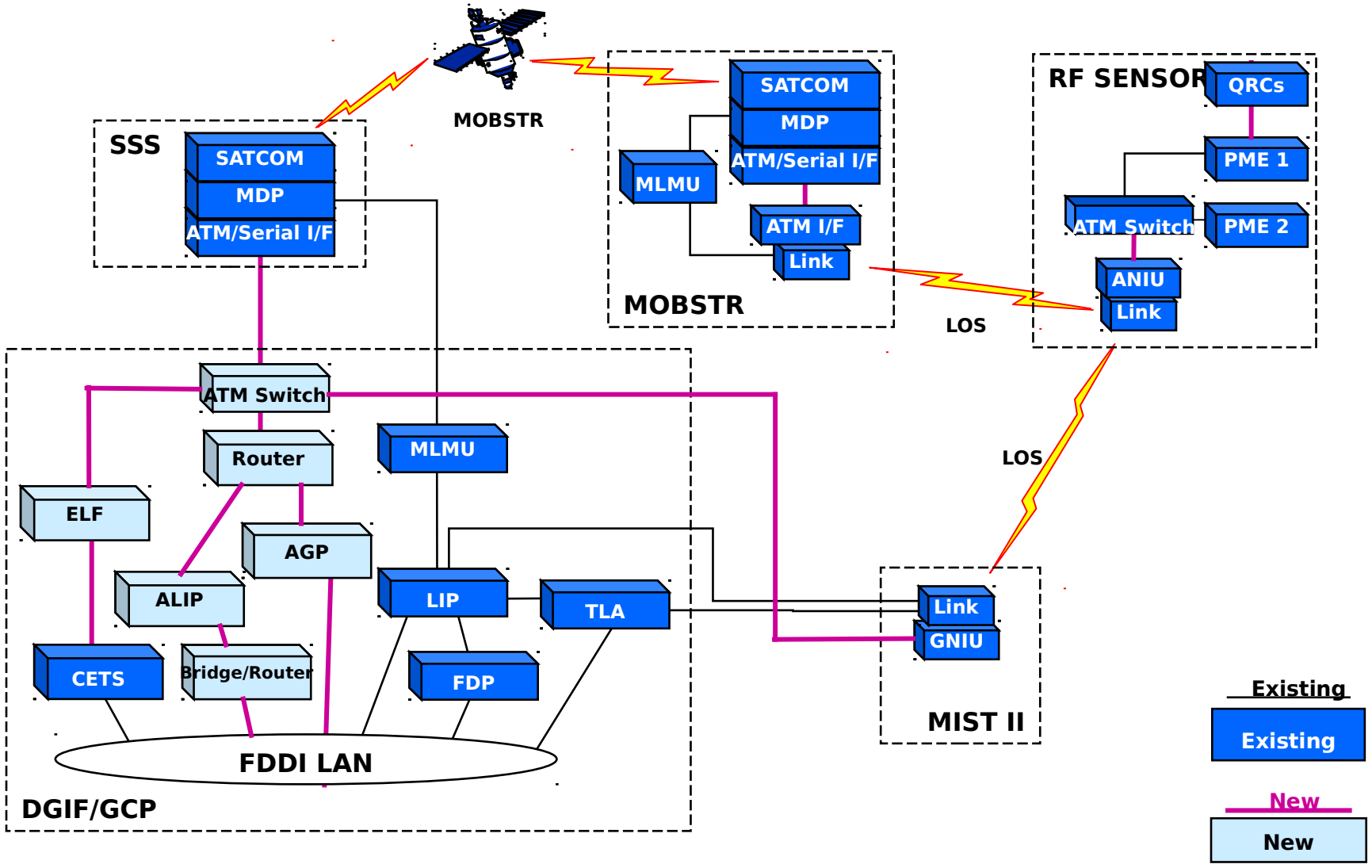
- Software and Hardware Development Completed. No Major Issues
- DGIF CSCI Testing complete ~1 month ahead of schedule – SWIT ahead of schedule
- PME SWIT continues on schedule to complete by mid August
- System Interface Testing beginning next month
- LMCO and L-3 Com are under contract
  - No subcontractor issues
- Coordinating Flight Testing Requirements/Plans with LX, LMCO and L-3Com
- All CDRLs to date delivered on or ahead of schedule
- Currently no high technical or schedule risks
- Submitted proposal for ATM PME Production/Deployment

Program Schedule

ID	Name	% Wor
1	**ATM Upgrade**	**53%**
2	**Critical Milestones**	**0%**
3	Contract Award	100%
4	Program Kickoff	100%
5	Negotiations Complete	100%
6	SDR Complete	100%
11	Ready for PDR	100%
12	PDR Complete	100%
15	QuickNotch/CR Baseline Merge	100%
21	PME CDR Complete	100%
22	DGIF/GCP CDR Complete	100%
23	Second Pull of QN/CR Baseline	100%
27	DLM PME Available	100%
34	PME-2 Available	100%
37	PME SWIT Start	100%
40	PME SWIT Complete	0%
42	DGIF SWIT Start	100%
45	DGIF SWIT Complete	0%
46	**GCP Integration & Test Milestones (LM)**	**0%**
48	Start GCP SW Integration Phase 1	0%
51	Start GCP System Integration Phase 1	0%
52	GCP System Integration Phase 1A Test Complete	0%
54	GCP System Integration Phase 1B Test Complete	0%
56	GCP Software and System Integration Phase 2	0%
58	GCP System Phase 2 Test Complete (Garland/FC/	0%
60	GCP Alpha Test	0%
62	GCP Beta Test	0%
64	GCP Acceptance Test	0%
70	Start System Integration	0%
75	System Integration Complete	0%
78	System Interface Test Complete	0%
85	Acceptance Test Complete	0%
87	Alpha Test Complete	0%
89	Beta Test Complete	0%
91	Flight Test Complete	0%
92	Gate 11 Complete	0%



Modified Data Link Architecture



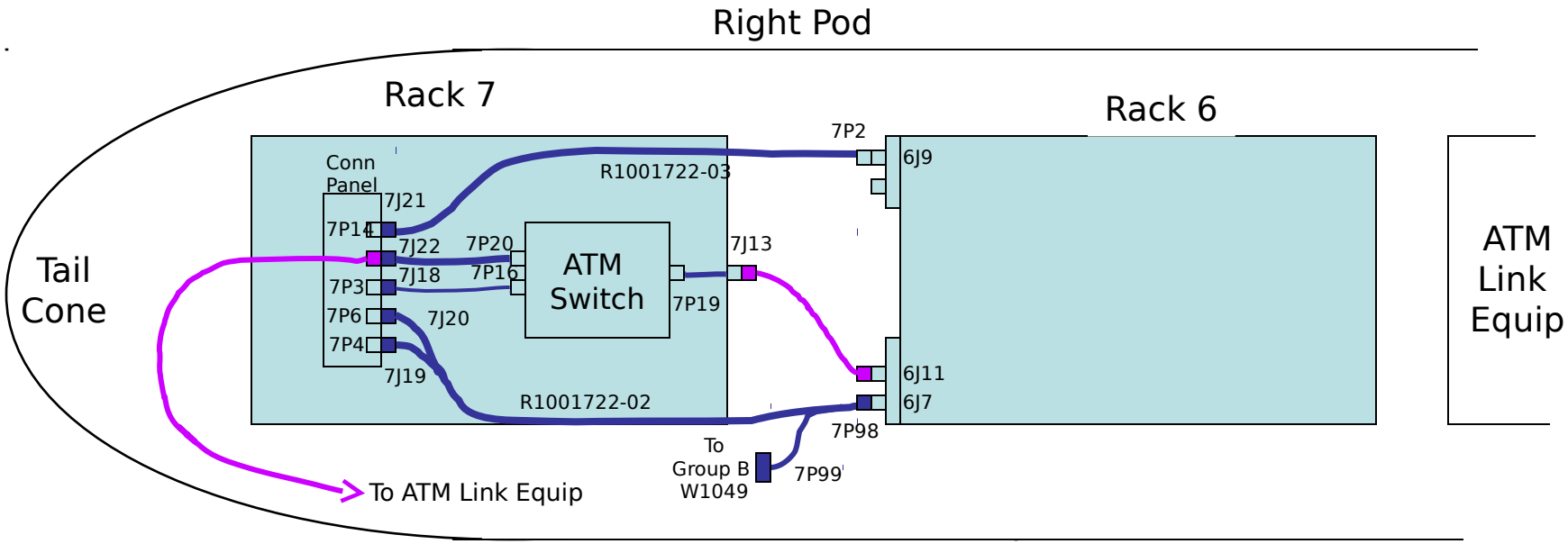
IN GOD WE TRUST
ISR
Intelligence Surveillance Reconnaissance
ALL OTHERS WE MONITOR

PME

PME Modifications

- PME Hardware Configuration Items
  - Rack 7
    - Remove Adaptive Link Formatter (ALF II)
    - Overlay Cables added to route signals to/from Rack 6
    - New Connector Panel for Overlay Cables
  - Liquid Cooled Rack 6
    - Rack 6 requires design modifications to add PPC and QRCI CCAs
      - Additional wiring and keying block added
      - Support bracket modified
    - Power PC CCA (PPC CCA) and ATM Module added
      - Same PPC/ATM used in existing 1R
    - Quick Reaction Capability Interface CCA (QRCI CCA)
      - New Card Design

New Rack 6 to Rack 7 Interconnect



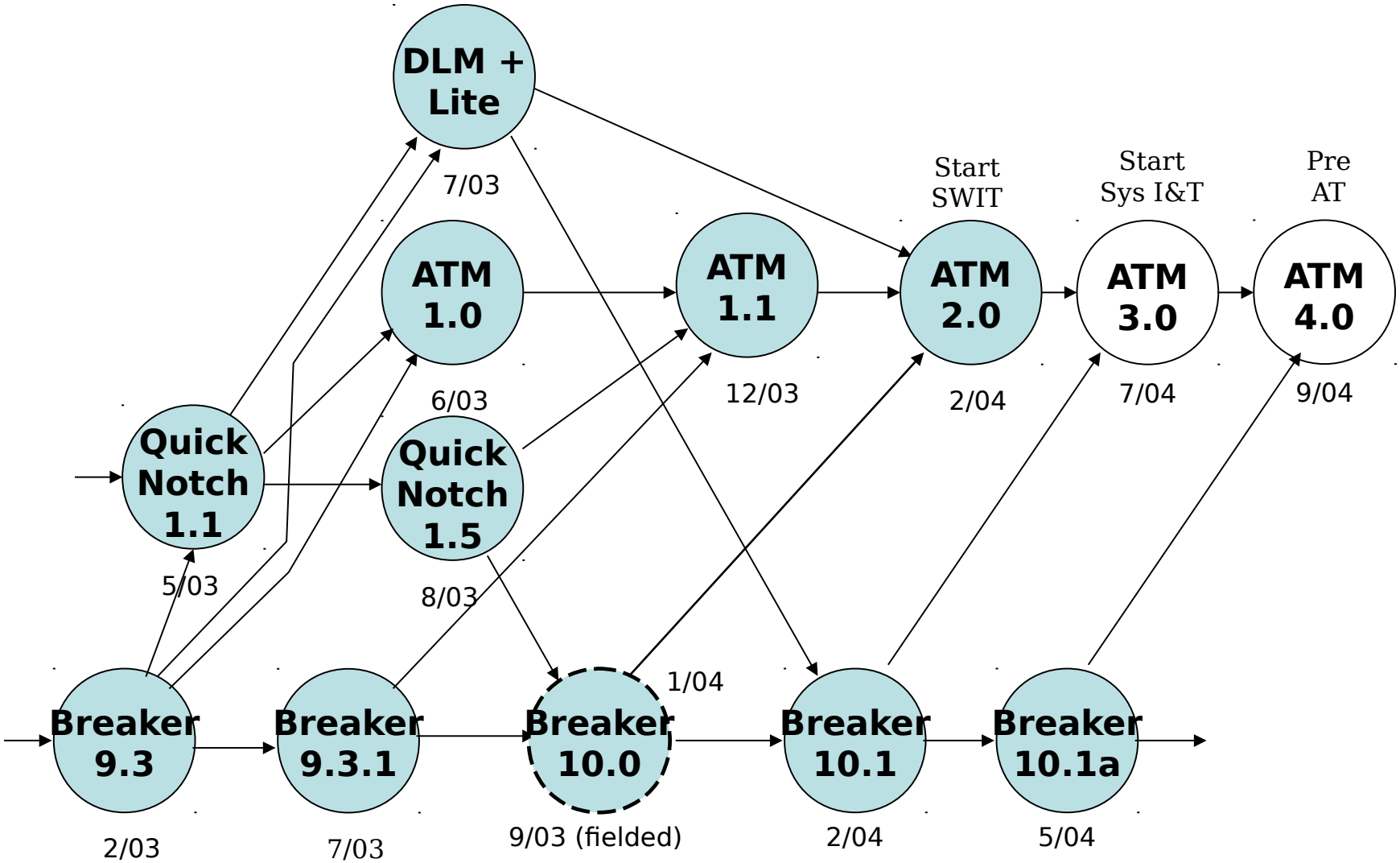
LEGEND:
Group C Overlay Cables
New/Mod Group B Cables

- **ALF II is removed**
- **Rack 6 and 7 wiring modifications for new cards and ALF II removal**
- **Additional wiring and keying block added to rack 6**

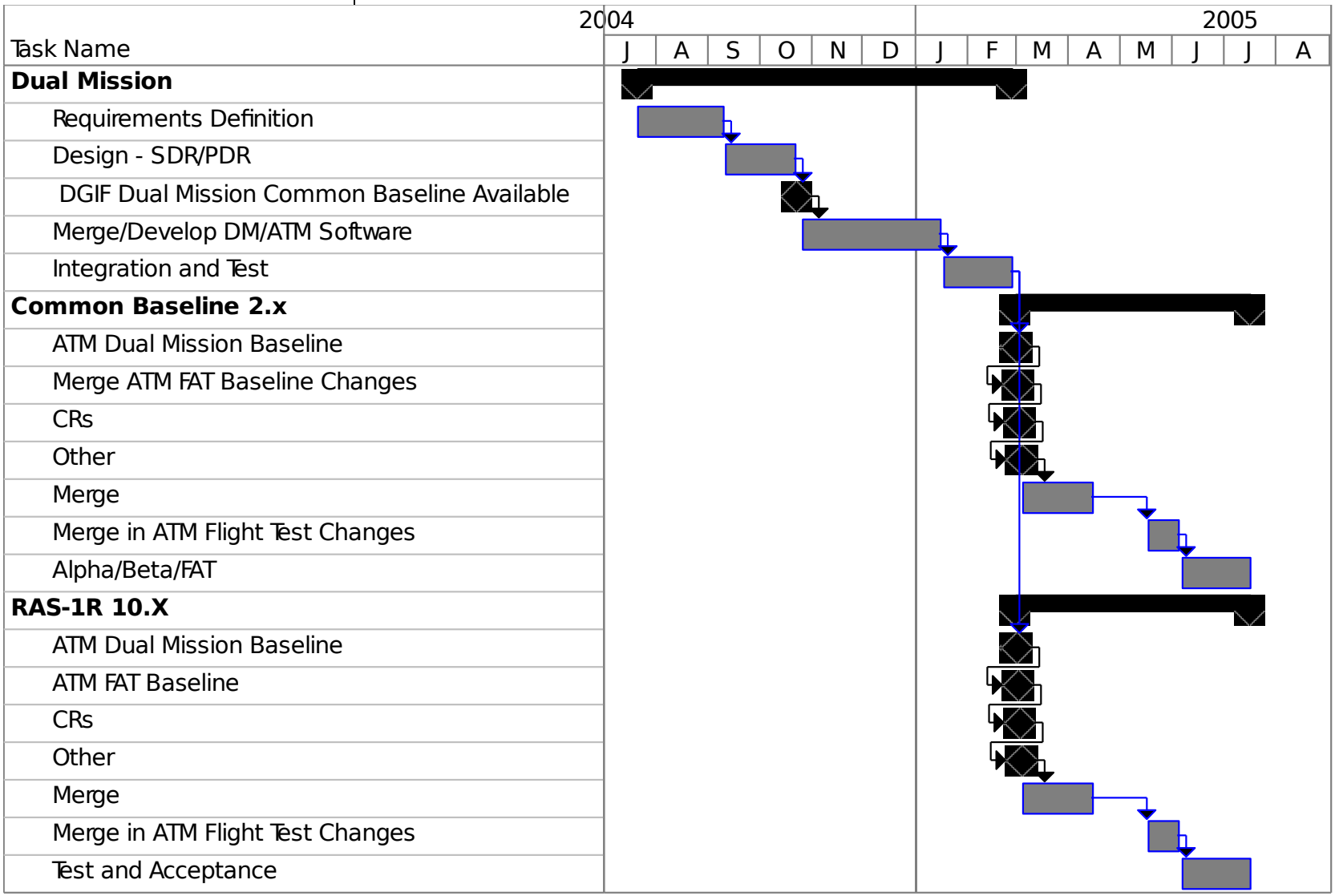
ATM PME Baselines

- July 2004 (End of SWIT/Start System I&T) - ATM 3.0
- January 2005 (End of System I&T/Start AT) ATM 4.0
- March 2005 (End of AT)
- Flight Test May 2005

CM Baseline Feeds - PME

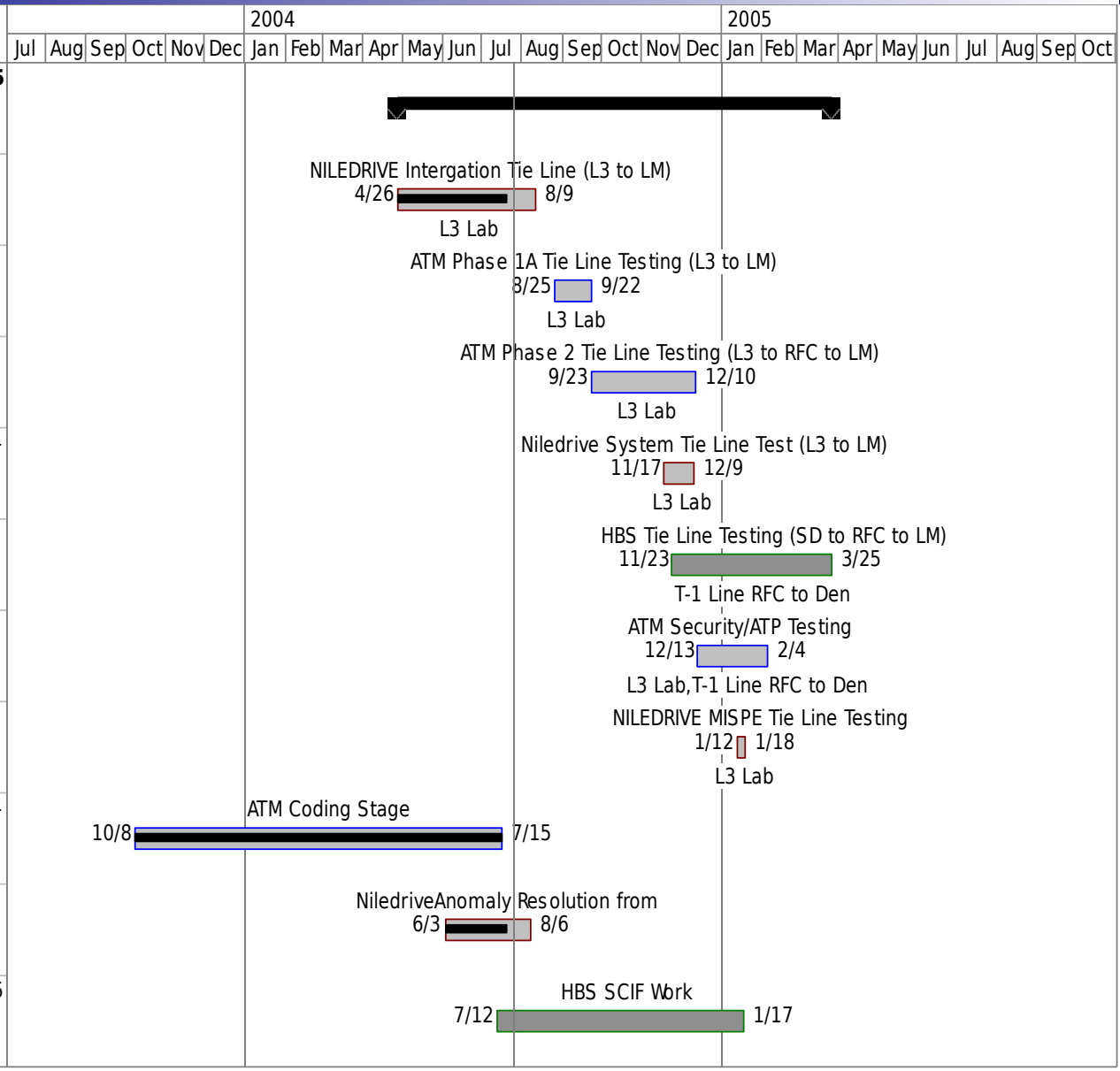


ATM Roadmap


2004
2005
Task Name
J A S O N D J F M A M J J A
Dual Mission
Requirements Definition
Design - SDR/PDR
DGIF Dual Mission Common Baseline Available
Merge/Develop DM/ATM Software
Integration and Test
Common Baseline 2.x
ATM Dual Mission Baseline
Merge ATM FAT Baseline Changes
CRs
Other
Merge
Merge in ATM Flight Test Changes
Alpha/Beta/FAT
RAS-1R 10.X
ATM Dual Mission Baseline
ATM FAT Baseline
CRs
Other
Merge
Merge in ATM Flight Test Changes
Test and Acceptance

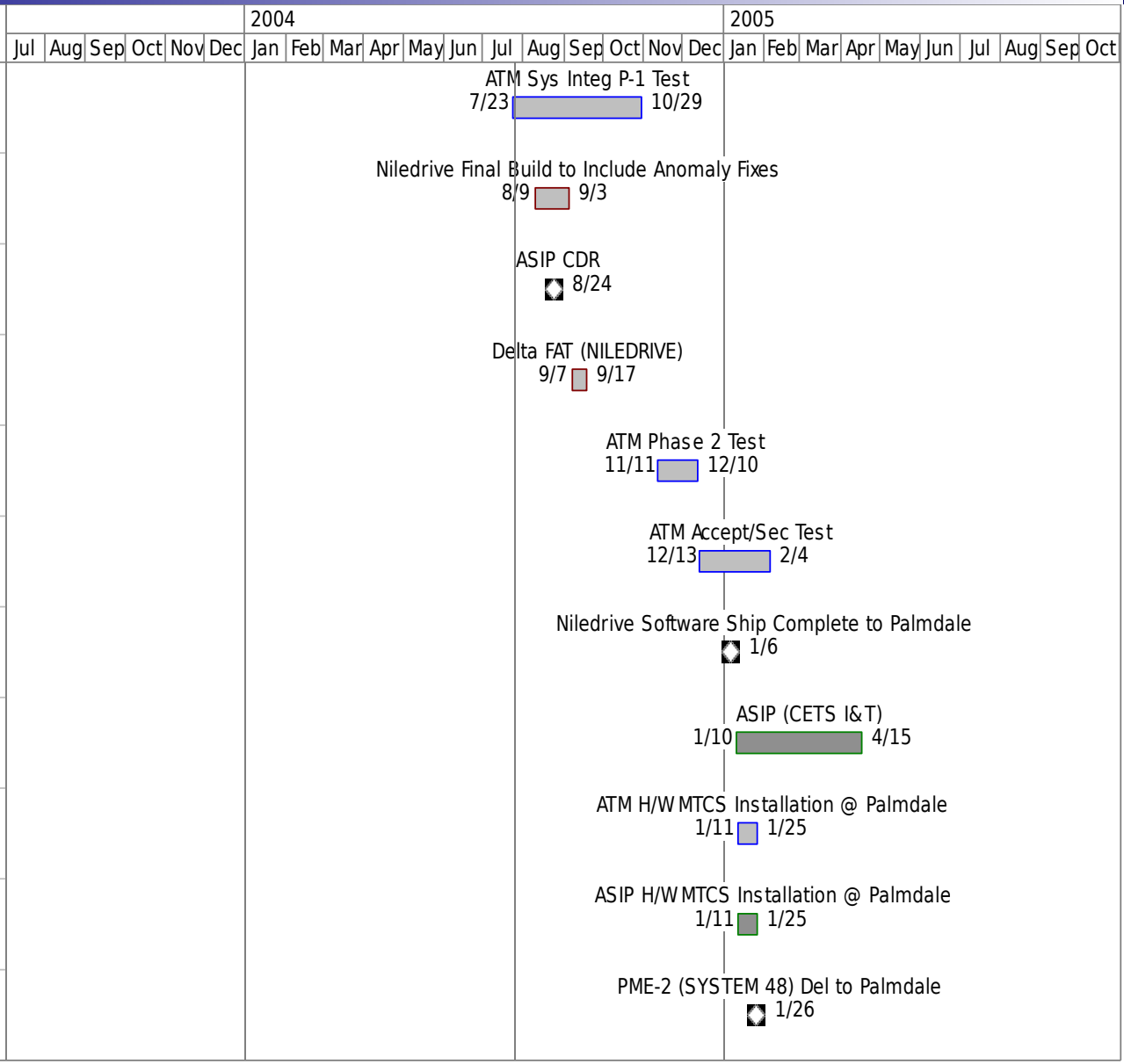
ATM/Niledrive/EAU/HBS Flight Test Integration Sched

ID	Task Name	2003 Start	Finish
1	**TIE Line Testing**	**Mon 4/26/04**	**Fri 3/25/05**
2	NILEDRIVE Intergation Tie Line	Mon 4/26/04	Mon 8/9/04
3	ATM Phase 1A Tie Line Testing (L3 to LM)	Wed 8/25/04	Wed 9/22/04
4	ATM Phase 2 Tie Line Testing (L3 to RFC to LM)	Thu 9/23/04	Fri 12/10/04
5	Niledrive System Tie Line Test (L3 to LM)	Wed 11/17/04	Thu 12/9/04
6	HBS Tie Line Testing (SD to RFC to LM)	Tue 11/23/04	Fri 3/25/05
7	ATM Security/ATP Testing	Mon 12/13/04	Fri 2/4/05
8	NILEDRIVE MISPE Tie Line Testing	Wed 1/12/05	Tue 1/18/05
9	ATM Coding Stage	Wed 10/8/03	Thu 7/15/04
10	Niledrive Anomaly Resolution	Thu 6/3/04	Fri 8/6/04
11	HBS SCIF Work (LM AERO)	Mon 7/12/04	Mon 1/17/05



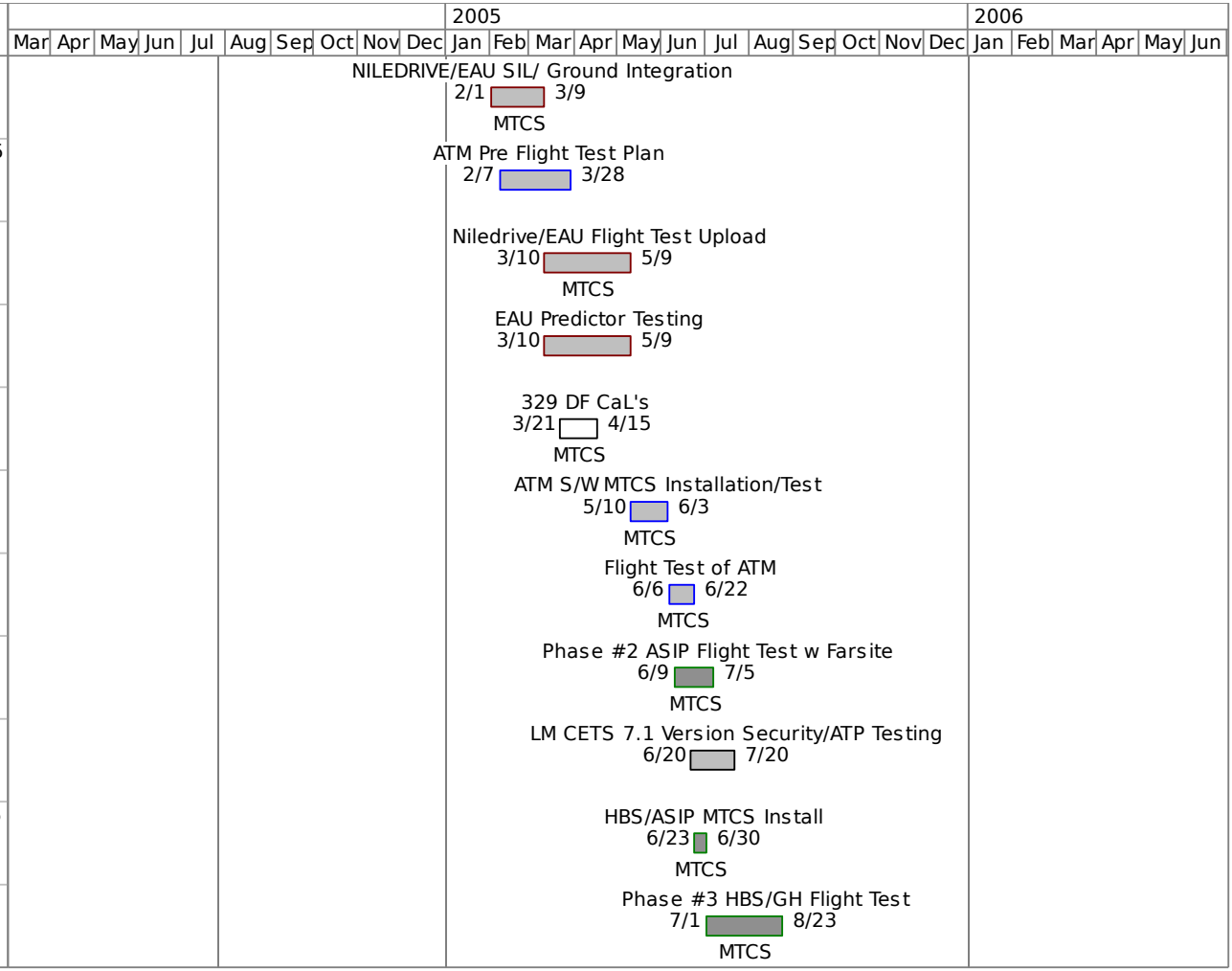
ATM/Niledrive/EAU/HBS Flight Test Integration Schedu

ID	Task Name	2003 Start	Finish
12	ATM System Integration Phase 1 Test	Fri 7/23/04	Fri 10/29/04
13	Niledrive Final Build to Include Anomaly Fixes	Mon 8/9/04	Fri 9/3/04
14	ASIP CDR	Tue 8/24/04	Tue 8/24/04
15	Delta FAT (NILEDRIVE)	Tue 9/7/04	Fri 9/17/04
16	ATM Phase 2 Test	Thu 11/11/04	Fri 12/10/04
17	ATM Acceptance/Security Test	Mon 12/13/04	Fri 2/4/05
18	Niledrive Software Ship Complete to Palmdale	Thu 1/6/05	Thu 1/6/05
19	ASIP (CETS I&T)	Mon 1/10/05	Fri 4/15/05
20	ATM H/W MTCS Installation	Tue 1/11/05	Tue 1/25/05
21	ASIP H/W MTCS Installation @ Palmdale	Tue 1/11/05	Tue 1/25/05
22	PME-2 (SYSTEM 48) Del to Palmdale	Wed 1/26/05	Wed 1/26/05


2004
2005
Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct
ATM Sys Integ P-1 Test
7/23 10/29
Niledrive Final Build to Include Anomaly Fixes
8/9 9/3
ASIP CDR
8/24
Delta FAT (NILEDRIVE)
9/7 9/17
ATM Phase 2 Test
11/11 12/10
ATM Accept/Sec Test
12/13 2/4
Niledrive Software Ship Complete to Palmdale
1/6
ASIP (CETS I&T)
1/10 4/15
ATM H/W MTCS Installation @ Palmdale
1/11 1/25
ASIP H/W MTCS Installation @ Palmdale
1/11 1/25
PME-2 (SYSTEM 48) Del to Palmdale
1/26

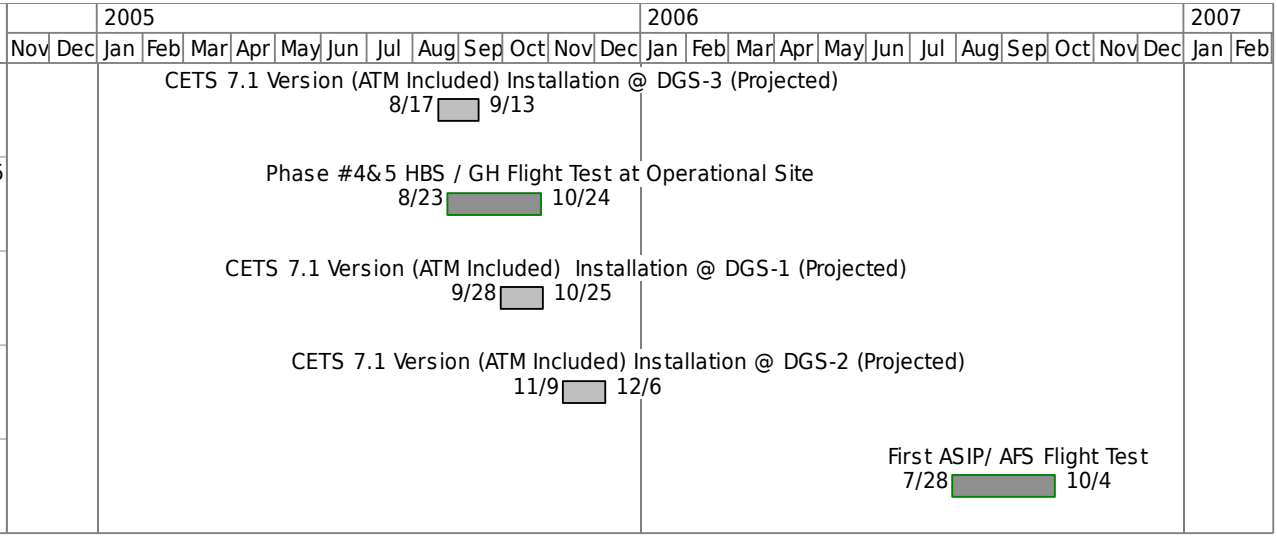
ATM/Niledrive/EAU/HBS Flight Test Integration Sched

ID	Task Name	Start	2004 Finish
23	NILEDRIVE/EAU SIL/ Ground Integration	Tue 2/1/05	Wed 3/9/05
24	ATM Pre Flight Test Plan	Mon 2/7/05	Mon 3/28/05
25	Niledrive/EAU Flight Test Upload	Thu 3/10/05	Mon 5/9/05
26	EAU Predictor Testing	Thu 3/10/05	Mon 5/9/05
27	329 DF CaL's	Mon 3/21/05	Fri 4/15/05
28	ATM S/W MTCS Installation/Test	Tue 5/10/05	Fri 6/3/05
29	Flight Test of ATM	Mon 6/6/05	Wed 6/22/05
30	Phase #2 ASIP Flight Test w Farsite	Thu 6/9/05	Tue 7/5/05
31	LM CETS 7.1 Version Security/ATP Testing	Mon 6/20/05	Wed 7/20/05
32	HBS/ASIP MTCS Install	Thu 6/23/05	Thu 6/30/05
33	Phase #3 HBS / GH Flight Test	Fri 7/1/05	Tue 8/23/05



ATM/Niledrive/EAU/HBS Flight Test Integration Sched

ID	Task Name	Start	Finish
34	CETS 7.1 Version Installation @ DGS-3 DO#24 (Projected)	Wed 8/17/05	Tue 9/13/05
35	Phase #4&5 HBS / GH Flight Test at Operational Site	Tue 8/23/05	Mon 10/24/05
36	CETS 7.1 Version Installation @ DGS-1 DO#24 (Projected)	Wed 9/28/05	Tue 10/25/05
37	GCP 7.1 Version Installation @ DGS-2 DO#24 (Projected)	Wed 11/9/05	Tue 12/6/05
38	First ASIP/ AFS Flight Test	Fri 7/28/06	Wed 10/4/06


2004
2005
2006
2007
Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
CETS 7.1 Version (ATM Included) Installation @ DGS-3 (Projected)
8/17 9/13
Phase #4&5 HBS / GH Flight Test at Operational Site
8/23 10/24
CETS 7.1 Version (ATM Included) Installation @ DGS-1 (Projected)
9/28 10/25
CETS 7.1 Version (ATM Included) Installation @ DGS-2 (Projected)
11/9 12/6
First ASIP/ AFS Flight Test
7/28 10/4

Production/Deployment Schedule

Issues

- PME Availability
  - In Plant GFE currently supporting multiple programs
    - PME Simulator developed to help off load resources
    - Cross program coordination team meeting monthly to minimize conflicts
- ATM Software Baseline
  - Raytheon will extend merge to the latest possible date to capture latest PME and DGIF Baselines available
  - Production estimates will include any software baseline update/merge activities so that the program is up to date will the latest capabilities.
  - ATM Roadmap will identify method to merge in ATM and Dual Mission into DGIF Common Baseline 2.X, RAS-1R 10.X .
- HBS Program impacts
  - HBS Program requires ATM Baseline by CDR (9/04) and ATM GFE
  - HBS Flight Test begins immediately after ATM Flight test is

Summary

- Program proceeding ahead of schedule and under budget
- All necessary GFE received
- No major technical or schedule issues

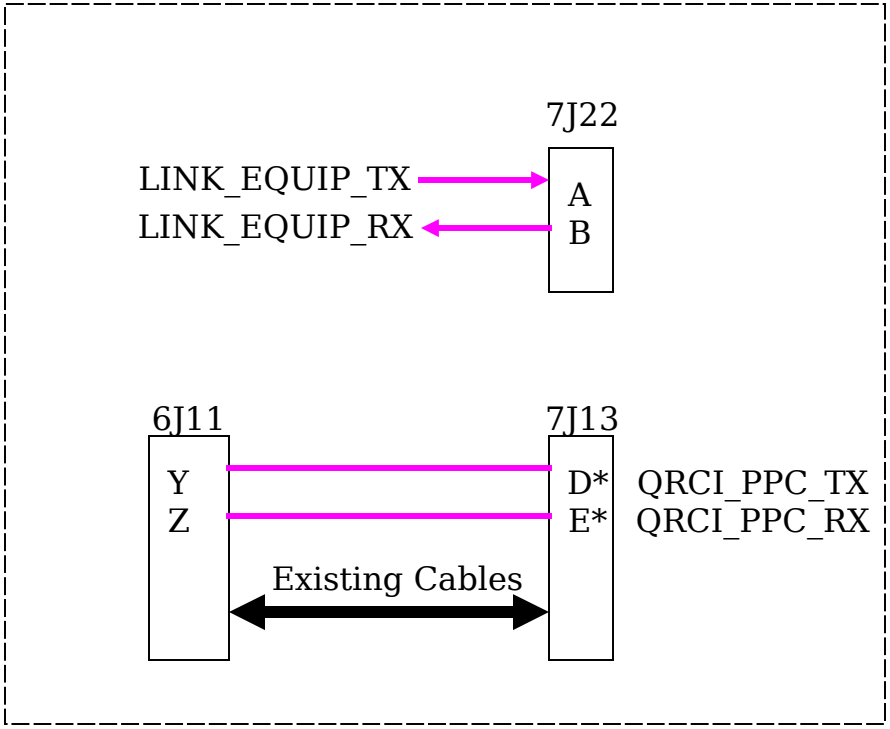
BACKUP SLIDES

Size, Weight & Power Changes

	PME1 (no QRCs)		
	1R	**ATM Upgrade**	**Δ**
Left Pod Weight (lbs.)	432.96	432.96	0
QBay Weight (lbs.)	93.36	93.36	0
Right Pod Weight (lbs.)	471.36	436.4 (est)	-34.96 (est)
Total Weight (lbs.)	**997.68**	**962.72 (est)**	**-34.96 (est)**
Left Pod Power (W)	3259.8	3259.8	0
QBay Power (W)	392.3	392.3	0
Right Pod Power (W)	3454.4	3219.8 (est)	-234.6 (est)

Rack to Rack Modifications (Group B)

Changes Necessary to Group B Cables



Represents Fibre Cable to be added